RESOURCE MANAGEMENT GUIDE

State Forest: Greene-Sullivan Compartment: 4 Tract: 3
Forester: Phil Jones Date: 2/4/09
Management Cycle End Year: 2029 Management Cycle Length: 20 Years

Location

Compartment 4, Tract 3 is located in the N ½ of the NE quarter of Section 25 – T7N – R8W of Sullivan County. It is approximately 3 miles south of the town of Dugger.

General Description

This tract is approximately 81.5 acres. The various land use components can be delineated as follows:
Closed Canopy Forest – 66 ac (Strip Mined)
Lakes – 4.5 ac
Early Successional Forest – 11 ac (2004 Hardwood Tree Planting)

The hardwood tree planting is located in an unmined, former crop field. All of the mature forest in this tract is located on spoil banks. The dominant cover types are mixed hardwood (29 ac), mixed pine (17 ac), and edge (20 ac).

History

The tract was acquired from The Maumee Collieries Company on December 2, 1949. No known records of the planting operation exist, but most of the current stand appears to have been established shortly after acquisition.

Boundary and Landscape Context

County roads 400S and 1600W form the north and east boundaries, respectively. The south boundary is bordered by Reservoir 26 campground and lake. Smedley Lake forms the west boundary. In general, the surrounding landscape consists of closed canopy forest interspersed with various open areas and strip mine pits.

Topography, Geology and Hydrology

Most of the tract has been strip mined and consists of a series long narrow, steep mounds of mine spoil (a mixture of soil, shale, sandstone, and some coal). White Ash Lake is located in the north half of the tract and drains to the south into another drainage ditch that runs parallel to the north side of reservoir 26. The unmined area (tree planting) is located in the southeast corner. This portion is level with natural soils formed in loess and in the underlying Illinoian glacial till. The bedrock in this area typically occurs as a sequence of shale, sandstone, mudstone, limestone, and coal.

Soils

Map unit: Cu - Cuba silt loam
Component: Cuba (100%)
The Cuba component makes up 100 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains. The parent material consists of acid silty alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 60 inches during January, February, March, April, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria.

Map unit: Sn - Stendal silt loam
Component: Stendal (90%)
The Stendal component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains. The parent material consists of acid silty alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 15 inches during January, February, March, April, December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria.

Map unit: St - Strip mines
Component: Strip mines (90%)
This component is on spoil piles. Slopes are 18 to 35 percent. The parent material consists of Loamy materials overlying graded shaly regolith. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Access

Currently, access from the west can only be obtained through an old landing in adjacent tract C4T7. A skid trail winds south and then east to the southwest corner of tract C4T3. The only other access is from the east across the tree planting field. There is a drainage ditch that flows to the south from white ash lake. This cannot be crossed with heavy equipment without establishing some sort of structural crossing.

Wildlife Habitat Features & Ecological Resource Review

Wildlife habitat suitable for a wide variety of native species should be optimized throughout the tract in order to promote and maintain a high level of faunal diversity.

Cover/Habitat Overview

TABLE 1

Habitat/cover type	0%	0 < 1%	1-10%	11-50%	51-90%	>90%	Unknown
Closed-canopy deciduous/mixed forest	☐	☐	☐	☒	☐	☐	☐
Pine/conifer plantations or natural stands	☐	☐	☐	☒	☐	☐	☐
Early successional forest (≤ 20 years old)	☐	☐	☒	☐	☐	☐	☐
Shrub-scrub or old field	☐	☐	☐	☐	☐	☐	☐
Grasslands/hayfield	☐	☐	☒	☐	☐	☐	☐
Cropland, pastures, feedlots	☐	☐	☒	☐	☐	☐	☐
Open water (lakes, ponds, rivers, streams, etc.)	☐	☐	☒	☐	☐	☐	☐
Riparian areas	☐	☐	☒	☐	☐	☐	☐
Developed areas	☐	☐	☒	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐	☐	☐

Table 1 shows the estimated proportion of each cover/habitat type within 1 mile of tract center. The majority of the area is closed canopy deciduous and pine forest. The area contains a number of small crop fields, young hardwood tree plantations, lakes, residential/developed areas, and county roads. This diverse landscape has resulted in a large amount of maintained forest edge. The only cover types not represented in the habitat overview are grasslands and shrub-scrub/old fields. None of the proposed management activities will significantly alter the relative proportion and availability of habitat/cover types in the assessment area.

Structural Habitat Features

TABLE 2

	Target Snag Density	
Diameter (DBH) Distribution	**Goal**	**C4T3**
Including at least this many snags per acre **≥ 9"**:	3	7.8
Including at least this many snags per acre **≥ 19"**:	0.5	0.3

TABLE 3

	Preferred Roost Trees per Acre	
Diameter (DBH) Distribution	**Goal**	**C4T3**
TOTAL minimum roost trees per acre **≥11"**:	9	9.6
Including at least this many roost trees **≥ 20"**:	3	1.2

Table 2 shows how this tract compares with the DoF guidelines for forest stand snag density. The data suggests that there is optimal snag density for trees ≥ 9". The target density for trees ≥ 19" is slightly deficient. This is mostly due to the young age of the stand. The majority of the forested tract is approximately 55 years old. When possible, larger trees may be killed during post harvest TSI operations. However, as the stand ages, the average tree diameter will increase and natural mortality will occur. This will most likely result in an optimal number of large diameter snags.

Table 3 shows how this tract compares to the Indiana Bat guidelines for preferred live roost trees. The inventory data suggests that optimal conditions exist for this habitat feature in the smaller size class, but are insufficient in the larger size class. Care will be taken during management operations to limit removal of preferred roost trees of all sizes.

IDNR Natural Heritage Database Review

A NHDB review was conducted for this tract. There are no records within the tract of any significant areas or T & E species, specifically bald eagle, northern harrier, American bittern or henslow's sparrow.

Exotic/Invasive Species

Species	Immediate Management Required	Monitoring/ Re-evaluation Recommended	Mapped?
Multiflora Rose	☐	☒	☐
Japanese Honeysuckle	☐	☒	☐
Bush Honeysuckle	☐	☒	☐
Autumn Olive	☐	☒	☐
Ailanthus	☐	☒	☐

Ailanthus was found near an old home site located at the northeast corner of the tree planting field. This was successfully treated a few years ago. Periodic monitoring of this site is recommended. If sprouts are found, then immediate management will be implemented.

At least one or more of the other species are prevalent on every forested tract on the property. Logistically it would be impossible to immediately treat every tract that is inventoried. Therefore, control efforts will not be made until the tract has been selected for active timber management. Treatment will primarily consist of basal bark chemical application on bush honeysuckle and autumn olive. Some control of multiflora rose may be made but efforts to completely control this and Japanese honeysuckle would most likely be futile.

Recreation

There are numerous recreational opportunities within or adjacent to this tract. There is a boat ramp located on Mason Lake. Part of the hiking trail that runs along the edge of reservoir 26 is located within this tract. Reservoir 26 lake and campground are located on the south side of the tract. These are two of the highest visitor use areas on the property. Like most other tracts on the forest, hunting occurs. However, access is fairly limited. There is a large drainage ditch that separates the hiking trail along the lake from the rest of the tract.

Cultural

Cultural resources may be present on the tract but their location is protected. Adverse impacts to significant cultural resources will be avoided during any management or construction projects.

Stand Descriptions and Silvicultural Prescriptions

Mixed Hardwood – 29 ac

Current Condition

The dominant species are yellow poplar, red maple, sycamore, and oaks (pin and shingle). The stand has a current stocking of 110% with a basal area of 118 sq.ft/ac and 329 trees/ac. The average volume is 7,634 bd.ft./ac.

The sawtimber size class has 72 sq.ft. of basal area and is comprised of 24% poplar, 20% red maple, 20% oaks (pin, shingle), 13% sycamore, 9% cottonwood, 4% cherry, 2%

black walnut, and 2% black locust. The average tree diameter is 18.5 in and average merchantable height is 28 ft.

The pole size class has 28 sq.ft. of basal area and is comprised of 19% red maple, 14% black walnut, 10% each of black cherry, black locust, hackberry, sassafras, and yellow poplar and 5% each of black oak, shingle oak, sugar maple, and sycamore.

The sub-merchantable size class contains approximately 214 trees/ac and consists of 18% dogwood, 18% yellow poplar, 14% red maple, 7% each of sassafras, shingle oak, white ash, and white pine, 4% each of elm, boxelder, green ash, pawpaw, persimmon, and sweetgum.

Prescription

An intermediate harvest consisting of single and group tree selection is recommended for this stand. Marking for this harvest will focus on removing undesirable, co-dominant and mid canopy trees. This should create large enough canopy gaps resulting in sufficient sunlight for understory and mid canopy release of desirable growing stock. This will also create adequate growing space for the remaining desirable, co-dominant trees. Species composition will not change drastically as a result of the harvest. However, the long term goal is to manage for poplar, oak, cherry, and walnut. This gradual shift from the current poplar - red maple – cottonwood - sycamore cover type will require multiple management cycles.

Overall, approximately 3976 bd.ft./acre of sawtimber should be harvested. The remaining stocking percentage will be around 70%, with a basal area of 70 sq.ft./ac, and contain an average of 3,670 bd.ft./ac.

Pre harvest TSI operations should focus on vine removal and exotic control. Post harvest TSI will consist of opening completion, coppicing, cull removal/snag creation and crop tree release.

Mixed Pine – 17 ac

Current Condition

This is a closed canopy white-red pine stand. The current stocking is 95% with a basal area of 119 sq.ft/ac and 882 trees/ac. The average volume is 3,000 bd.ft./ac.

The sawtimber size class has 37.5 sq.ft./ac of basal area and is comprised of 53% white pine, 20% red maple, 7% each of red pine, black cherry, sycamore, and yellow poplar. The average tree diameter is 14 in and average merchantable height is 18 ft.

The pole size class has 65 sq.ft./ac of basal area and is comprised of 50% red pine, 27% white pine, 8% red maple, and 4% each of sycamore, black cherry, black walnut, and pin oak.

The sub-merchantable size class contains approximately 690 trees/ac and consists of 87% white pine, 4% dogwood, 4% white ash, 2% red maple, and 2% sassafras.

Prescription

This stand is located entirely along the south side of White Ash Lake. This pit has extremely steep banks, many of which are considered hazardous highwalls. Management along this bank would be incredibly difficult and dangerous, therefore it will be left alone.

A combination of intermediate and regeneration cuttings are recommended for the remainder of the stand. The intermediate marking will consist of single and group tree selection methods. The focus should be on removing poorly formed, injured, and/or suppressed white pine. This will create adequate growing space for the remaining desirable, co-dominant white pine, red maple, black cherry, and poplar. The regeneration marking should be carried out in areas dominated with stagnated red pine. This should result in a release of maple, sassafras, and ash growing in the understory.

Species composition should change significantly as a result of the harvest. The proportion of red maple and poplar will increase in the areas dominated with white pine. The red pine areas will shift to early successional hardwood forest.

Overall, approximately 1,322 bd.ft./acre of sawtimber should be harvested. The remaining stocking percentage will be around 80%, with a basal area of 84 sq.ft./ac, and contain an average of 1,680 bd.ft./ac.

Pre harvest TSI operations should focus on vine removal and exotic control. Post harvest TSI will consist of opening completion of red pine, coppicing, cull removal and crop tree release.

Edge – 20 ac

Current Condition

This stand contains a variety of characteristics, but in general consists of immature and/or poor quality timber. This is a noncontiguous stand located in two areas. The north portion is a narrow strip located between county road 400S and Mason Lake. The south area is located along the north side of Res. 26 and wraps south and then east between the edge of the tree planting and Res. 26 campground.

The stand has a current stocking of 98% with a basal area of 96 sq.ft./ac and 438 trees/ac. The average volume is 3,950 bd. ft./ac.

The sawtimber size class has 55 sq. ft. of basal area and is comprised of 73% black cherry, 18% sassafras and 9% green ash. The average tree diameter is 17 in and average merchantable height is 15 ft.

The pole size class has 55 sq. ft. of basal area and is comprised of 45% black cherry, 18% shingle oak, and 9% each of black locust, dogwood, green ash, and sassafras.

The sub-merchantable size class contains approximately 373 trees/ac and consists of 23% red maple, 15% each of American elm, dogwood, and yellow poplar, and 8% each of black locust, red cedar, pawpaw, and sassafras.

Prescription

Due to the timber characteristics and proximity to the county road to the north and high visitor use recreation area to the south, a timber harvest is not recommended for these areas. Instead, management efforts should focus primarily on invasive control.

Tract Summary

Overall the proposed harvesting operation would produce an estimated total of 137,800 bd. ft or approximately 2,995 bd.ft./ac. An estimated 25,000 bd.ft. would come from pine

and the rest from mainly poplar, red maple, pin oak, sycamore, and cottonwood. The proposed management activities would result in an average stocking of 70% in the hardwood stand. The pine stand would shift into more of a mixed stand with a stocking of 80%.

As long as harvesting operations are not conducted during wet periods and skidding and hauling equipment remain in designated areas, there should not be any negative impacts to the soil. Furthermore, if a portable bridge or other structure is in place across the drainage area, the hydrology will not be altered. The recreation areas to the south of the tract should not be adversely impacted during management activities due to the exclusion of the edge area from harvesting operations. Wildlife habitat should be enhanced as a result of the proposed harvesting and TSI operations.

Proposed Activities Listing

Proposed Management Activity	*Proposed Date*
TSI (Pre-Harvest)	2014 – 2016
Skid Trail / Log Yard Construction	2014 – 2016
Timber Marking	2015 - 2016
Harvest	2016 - 2018
Close Out	2017 - 2018
TSI (Post-Harvest)	2017 - 2020
Re-Inventory	2029

Attachments (on file in Property office)

Attach the following items.

- Maps (Inventory, Soils, Stands, Disturbance, Archeology, Harvest)
- A stocking guide chart with the tract level, and each stand level stocking condition plotted and identified.
- Wildlife Habitat and Ecological Review
- T Cruise reports

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